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Exploring the Potential Moderating Role of Self-Compassion on the Relationships Between Event Centrality and Post-Assault Psychological Outcomes.

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To the Graduate Council:

I am submitting herewith a dissertation written by Lauren Hamrick entitled "Exploring the Potential Moderating Role of Self-Compassion on the Relationships Between Event Centrality and Post-Assault Psychological Outcomes.." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

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Exploring the Potential Moderating Role of Self-Compassion on the Relationships Between Event Centrality and Post-Assault Psychological Outcomes

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Abstract

Objective: The purpose of the present study was to examine whether various post-assault internal processes (i.e., present control, event centrality, and compassionate and uncompassionate self-responding) would predict distress and resilience among women who have experienced adult sexual assault (ASA). Additionally, we tested whether compassionate and uncompassionate self-responses would moderate the relationships between event centrality and outcomes. **Method:** A convenience sample of women who had experienced sexual assault during adulthood ($N = 253$) completed an anonymous online survey. **Results:** Regression analyses showed that lower present control, higher event centrality, and higher uncompassionate responses to the self significantly predicted PTSD. Additionally, higher present control and higher compassionate responses to the self significantly predicted resilience. There was no moderation of the relationship between event centrality and outcomes by either compassionate responses to the self or uncompassionate responses to the self. **Conclusions:** Endorsing greater levels of uncompassionate responses towards the self was associated with greater distress, while engaging in greater compassionate responses to the self was associated with greater resilience, even when accounting for levels of present control and event centrality.

Keywords: sexual assault, PTSD, resilience, present control, event centrality, self-compassion

Table of Contents

Chapter 1: Introduction

Most adults report having experienced at least one potentially traumatic event across their lifetime (Kilpatrick et al., 2013). While exposure to potentially traumatic events is common, reactions to these events have considerable variability. While some people experience acute stress and then a remittance of symptoms, others may experience chronic distress in the form of psychopathology, or, less commonly, delayed distress, wherein there is minimal stress reaction at the time of the event but symptoms arise months or even years later (see Bryant, 2017 for review; also see Santiago et al., 2013). Among the types of potentially traumatic experiences, sexual assault carries a high conditional risk of psychopathology in the form of posttraumatic stress disorder (PTSD; Kessler et al., 2014). For some women who have experienced sexual assault, elevated distress can linger for years after the event itself (Dworkin Menon, Bystrynski, & Allen, 2017; Elliott, Mok, & Briere, 2004; Frazier, Mortensen, & Steward, 2005).

A diagnosis of PTSD requires that a person who has been exposed to a potentially traumatic event continues to experience some degree of intrusive thoughts about the traumatic event, negative changes in thoughts or mood, changes in physiological reactivity, and a marked pattern of avoidance one month or more after the event (American Psychiatric Association, 2013). While the risk of PTSD is high among sexual assault survivors (Kessler et al., 2014; Moor & Farchi, 2011; Pietrzak, Goldstein, Southwick, & Grant, 2011), not all women who are survivors of sexual assault develop PTSD. Research suggests that even those who initially are symptomatic can demonstrate recovery, growth, and resilience in the aftermath of sexual violence (Steenkamp, Dickstein, Salters-Pedneault, Hofmann, & Litz, 2012; Ulloa, Guzman, Salazar, & Cala, 2016).

Resilience has been described various ways in the trauma literature. While some researchers (e.g., Bonanno, Westphal, & Mancini, 2011) specifically define resilience as a lack of elevated distress following exposure to a potentially traumatic event, others define resilience as positive adaptation following exposure to extreme stress (Agaibi & Wilson, 2005; Smith et al., 2008). When conceptualized as positive adaptation, resilience includes the ability to successfully cope with stressful situations and maintain or regain adaptive functioning following adversity (Campbell-Sills & Stein, 2007; Connor & Davidson, 2003; Smith et al., 2008). Using this definition, resilience does not necessitate a complete lack of distress following exposure to a traumatic event. In fact, true resilience may be characterized by maintaining a degree of adaptive functioning in spite of some feelings of distress (Windle, 2011).

Overall, resilience has an inverse relationship with psychopathology (Agaibi & Wilson, 2005), and thus serves as one indicator of positive adaptation following extreme stressors. Among women who have experienced sexual assault, most demonstrate symptoms of distress in the month following the event, but a high proportion experience a remittance in these symptoms by three months post-assault (Gutner, Rizvi, Monson, & Resick, 2006; Steenkamp et al., 2012). Although these studies (Gutner et al., 2006; Steenkamp et al., 2012) did not measure resilience directly, the evidence that most women experience a reduction in distress suggests that they are able to successfully adapt to adversity to some extent.

Given these variations in post-assault trajectories, from resilience to chronic distress, an ongoing need exists to study risk and protective factors that influence recovery from sexual assault. At the individual level, various risk and protective factors have been identified that can impact post-assault adjustment (e.g., Campbell, Dworkin, & Cabral, 2009; Ullman, 2014; Ulloa et al., 2016). Three of these factors, present control, event centrality, and self-compassion, each

relate to how the survivor understands her traumatic experience, integrates it into her understanding of self and the world, and attempts to address her current symptoms and recovery. Investigating how these internal processes interact and relate to one another is an important step toward understanding how individuals can marshal their internal resources in ways that lead to positive adjustment.

Present Control

Experiencing a sense of control over one's life provides a number of psychological benefits (see Skinner, 1996), but traumatic events are relatively uncontrollable (Frazier, Berman, & Steward, 2002) and can disrupt a person's sense of their place in the world. Control beliefs following trauma exposure can be divided temporally into past control, future control, and present control (Frazier et al., 2002; Frazier et al., 2011). Each of these forms of control addresses the survivor's perception of her influence over different aspects of the trauma. Past control refers to the extent that an individual perceives that she could control the occurrence of the event, future control is her belief in the ability to avoid similar events, and present control is her belief in her ability to manage her current experiences related to the event, such as symptoms, emotions and the recovery process (Frazier et al., 2002; Frazier, 2003; Frazier et al., 2011).

The separation of perceptions of controllability along the temporal dimension is warranted because each type of control has different associations with post-trauma mental health. Past control is generally associated with poorer post-trauma outcomes (e.g., Frazier et al., 2011; Najdowski & Ullman, 2009). Future control, while not always deleterious, may be detrimental in the context of events that cannot be reliably predicted or controlled (Frazier et al., 2011). Present control, however, has consistently been associated with lower levels of distress in mixed trauma

and sexual assault-specific samples (e.g., Frazier et al., 2011; Najdowski & Ullman, 2009; Ullman, Filipas, Townsend, & Starzynski, 2007). Higher perceptions of present control are associated with lower levels of PTSD, both directly and indirectly via their inverse association with avoidant coping (Najdowski & Ullman, 2009). Among sexual assault survivors, present control has shown a stronger association with psychological outcomes as compared to past and future control (Frazier, 2003), and is the only control belief that predicts decreased rather than increased distress.

Qualitative research with sexual assault survivors suggests that recovery itself is marked by gaining or regaining the belief that one's present life is under one's control (Ranjbar & Speer, 2013). Quantitative research supports this, as present control has been shown to be a positive predictor of well-being following exposure to stressful events in addition to a predictor of decreased symptom severity (Frazier et al., 2012). While the authors could not locate research that examined the relationship between present control and resilience among sexual assault survivors, present control has demonstrated a positive association with self-rated recovery, another measure of positive post-assault adaptation (Najdowksi & Ullman, 2009). In other words, survivors who perceived that they had control over their own recovery process rated themselves as further along in their recovery. Additionally, general control beliefs have been shown to share a positive association with resilience among trauma survivors, although control beliefs were not a significant predictor of resilience in regression analyses (Wolfe & Raye, 2015). Because general control beliefs are not as strong of a predictor of post-trauma outcomes as trauma-related present control beliefs (Frazier et al., 2011), we hypothesize that present control beliefs will be a significant predictor of resilience in the current study.

One possible reason for the robust relationship between perceptions of present control and better post-assault adjustment is the fact that the present is more amenable to efforts to exert control than either the past or the future. Present control has been described as a proactive process whereby survivors focus on what can be done about their reactions to the traumatic event (Frazier et al., 2011). In other words, it is a mindset that facilitates a focus on what can presently be done about the situation, though this may not translate to use of active coping strategies. Indeed, research suggests that present control is not consistently associated with specific forms of approach coping (Frazier et al., 2011), although it is inversely associated with various forms of avoidance coping among sexual assault survivors, including substance use (Tsong & Ullman, 2018; Peter-Hagene & Ullman, 2014) and social withdrawal (Frazier et al. 2005).

Overall, present control can be thought of as a subjective sense of the extent to which a survivor remains empowered to seek resilience following a traumatic event. Given that there are few consistent predictors of positive adjustment following sexual assault (Najdowski & Ullman, 2009; Ullman et al., 2007), present control is an important aspect of investigation for understanding women's recovery processes. To the authors' knowledge, few studies have investigated both present control and event centrality in trauma survivors, and none have considered both of these aspects simultaneously in adult sexual assault survivors.

Event Centrality

In addition to the amount of control the survivor perceives she has over the event in the present, the saliency of the memory for a traumatic event is another important subjective factor in adjustment. Specifically, an event can become central to one's identity if it is seen as a turning point in the life narrative (Berntsen & Rubin, 2006). When this occurs, and there is a high level of what Bernsten and Rubin (2006) call "event centrality," memories of the event become highly

integrated into the individual's overall view of the self. If a traumatic event serves as a key memory in this way, the attributions associated with the event's causal features and the meaning made from the event will continue to influence how new experiences are interpreted and will guide expectations about the future (Bernsten, Willert, & Rubin, 2003). Some research suggests that women may be more likely to incorporate negative events into their sense of self (Boals, 2010). Thus, given women's increased risk of sexual violence (Smith et al., 2017), focusing specifically on women's experiences of sexual violence and how those experiences do or do not become centralized to identity is crucial.

Because traumatic events tend to be negative, unusual, and unpredictable in nature, theory suggests that centralizing traumatic experiences will produce deleterious repercussions, including increased distress (Bernsten et al., 2003). Most evidence supports this assumption, as higher ratings of event centrality are associated with greater PTSD symptom severity among college students (Bernard, Whittles, Kertz, & Burke, 2015; Boals & Schuettler, 2011), older adults (Ogle, Rubin, & Siegler, 2014), displaced persons (Chukwuorji, Ifeagwazi, & Eze, 2017), combat veterans (Brown, Antonius, Kramer, Root, & Hirst, 2010), and women who have experienced childhood sexual abuse (Robinaugh & McNally, 2011). As noted in feminist theories of sexual assault (e.g., Burt & Katz, 1987), sexual violence against women is a societal problem that is enacted in an intensely personalized manner. The level of violation against the self present in sexual assault suggests that survivors of sexual assault may be more likely to see the event as a turning point, making event centrality an important variable for understanding post-assault outcomes. Some research (Reiland & Clark, 2017) suggests that interpersonal traumas are more likely to be perceived as central to one's identity than non-interpersonal

traumas, although not all studies have reached this conclusion (e.g., Ogle, Rubin, Bernsten, & Siegler, 2013).

Event centrality may be a particularly important predictor of post-trauma distress because it captures the subjective experience of the traumatic event, which may be more strongly associated with distress than objective features of the trauma. Indeed, a review of the literature on sexual assault suggests that few objective features of the event are strongly related to post-trauma mental health, while more dynamic post-assault processes, like cognitions about the self and reactions from others, have a strong association with outcomes (Campbell et al., 2009). When event centrality (a subjective measure) and cumulative trauma exposure (an objective measure) have been measured together, event centrality has been shown to explain more variance in PTSD symptoms than cumulative trauma exposure (Bernard et al., 2015; Ogle et al., 2014; Roland, Currier, Rojas-Flores, & Herrera, 2014).

While centralizing an event in one's identity has robust support as a risk factor for PTSD (e.g., Boals & Ruggero, 2016; Roland et al., 2014), the relationship between event centrality and positive post-trauma adaptation is more complex. If a potentially traumatic event is low in centrality, it may not inspire a change in internal meaning systems (Bernsten & Rubin, 2006). If this is the case, levels of distress may be low while levels of resilience are high. On the other hand, events perceived as highly salient to identity may challenge a survivor's recovery and limit resilience. Direct investigations into the relationship between event centrality and resilience among trauma-exposed samples have been mixed, however. In support of an inverse relationship between resilience and event centrality, one study that used a mixed college student and community sample of adults who had experienced traumatic events in the past two years found that high event centrality predicted lower resilience (Wolfe & Ray, 2015). Further, results

indicated that women had lower levels of resilience, likely as a function of their increased exposure to interpersonal trauma (Wolfe & Ray, 2015).

However, not all evidence supports an inverse association between resilience and event centrality in trauma-exposed samples. One study of college students (Wamser-Nanny et al., 2018) found no relationship between event centrality and resilience, but was limited by potential ceiling effects, as the average level of resilience in the sample was quite high. Similarly, Bernard et al. (2015) found no significant association between high levels of event centrality and resilience. However, in this study event centrality was transformed from a continuous measure to a dichotomous measure of high versus low event centrality, which could obscure meaningful differences by oversimplifying the data. Overall, limitations in the measurement of resilience and event centrality in previous research make it difficult to determine whether or not event centrality is linked to resilience. Previous evidence that event centrality negatively predicts resilience in an age-diverse adult sample (Wolfe & Ray, 2015), coupled with the fact that interpersonal traumas have been associated with higher ratings of event centrality (Reiland & Clark, 2017), suggests that higher event centrality may be associated with lower resilience in the present study.

Although both present control (e.g., Ullman et al., 2007) and event centrality (e.g., Roland et al., 2014) are strong predictors of PTSD symptom severity following trauma exposure, the authors could find only one study that examined these internal processes together. The study investigated the Cognitive Growth and Stress (CGAS) model (Brooks, Graham-Kevan, Lowe, & Robinson, 2017), which posits that a traumatic event that significantly disrupts control beliefs will also likely disrupt one's self-concept. When tested, Brooks et al. (2017) found the predicted inverse relationship between present control and event centrality. However, the role of event centrality in predicting PTSD symptom severity post-sexual assault has yet to be investigated

within a single-trauma sample of sexual assault survivors. Based on previous findings, we hypothesize an inverse association between present control and event centrality in the present study. In other words, it is likely that if a sexual assault survivor thinks the assault (a highly negative and uncontrollable event) has continued relevance to current events in her life, it is likely she will feel less control over her own recovery and present reactions to the event as well.

Self-Compassion

People respond to and interpret stressful situations in a variety of ways. Subjective features of the event, including one's control over its present impact and its salience for identity, influence how distressing the event becomes (Berntsen & Rubin, 2006; Frazier et al., 2011). A potential protective factor related to one's subjective experience following traumatic events is self-compassion. Self-compassion is an orientation towards treating the self with positive regard, kindness, and caring, which is activated in times of stress or suffering (Neff, 2003a; Neff, 2016). Most self-compassion research utilizes Neff's (2003a) definition of self-compassion, which emphasizes the interplay of three interactive facets and their opposites in the creation of a self-compassionate stance: (a) self-kindness/self-judgment, (b) common humanity/isolation, and (c) overidentification/mindfulness. In other words, a self-compassionate response to stress is one that involves treating the self with care rather than judgment, seeing suffering as part of human experience rather than an isolating condition, and being aware of emotions, particularly negative ones, without feeling consumed by them.

Self-compassion is negatively associated with a variety of forms of psychological distress and psychopathology. Meta-analysis supports an inverse link between self-compassion and both depression and anxiety, as well as overall stress (MacBeth & Gumley, 2012). The inverse association between self-compassion and psychopathology appears to hold following exposure to

potentially traumatic events (PTEs), as evidence suggests that self-compassion predicts lower levels of depressive symptoms (Hamrick & Owens, 2018; Maheux & Price, 2016), anxiety (Maheux & Price, 2016), and PTSD (Hiraoka et al., 2015; Maheux & Price, 2015; Scoglio et al., 2018) following exposure to a variety of PTEs. However, this literature is not without contradictions, as some research (Held & Owens, 2015) suggests that increases in self-compassion through intervention are not associated with significant decreases in PTSD, or that self-compassion is only meaningfully related to the avoidance symptoms of PTSD (Thompson & Waltz, 2008). Other research (Barlow, Turow, & Gerhart, 2017) points to an indirect rather than direct relationship between self-compassion and PTSD symptom severity. For example, self-compassion has been found to be inversely associated with PTSD via its relationship with emotion regulation (Barlow et al., 2017).

Limited research on trauma and self-compassion has focused exclusively on adult sexual assault survivors. One cross-sectional study of adult sexual assault survivors (Hamrick & Owens, 2018) supported an inverse association between self-compassion and PTSD via self-blame attributions and disengagement coping. Preliminary evidence also suggests that interventions designed to increase self-compassion may be accompanied by decreases in PTSD for survivors of adult sexual assault (Au et al., 2017). A nonconcurrent, multiple baseline study of Compassion Focused Therapy with ten participants, eight of whom were treated for sexual assault-related PTSD, found that participants experienced reductions in PTSD from baseline to follow-up, increased their self-compassion, and decreased their self-blame (Au et al., 2017). However, while sexual assault survivors made up the majority of the sample, the small sample size and lack of a control group limit generalization.

In addition to the negative association between self-compassion and psychological distress, self-compassion has been associated with a variety of positive mental health outcomes. For example, meta-analysis has demonstrated a consistent positive correlation between self-compassion and well-being, broadly defined (Zessin, Dickhäuser, & Garbade 2015). Adopting a self-compassionate stance may be linked to resilience among individuals facing significant or extreme stress. For example, self-compassion has demonstrated positive associations with resilience among samples with chronic, disabling illnesses like spina bifida and multiple sclerosis (Hayter & Dorstyn, 2013; Nery-Hurwit, Yun, & Ebbeck, 2018), and among women who have been the victims of interpersonal violence (Scoglio et al., 2018).

Some of the mixed findings regarding the extent to which self-compassion functions as a protective factor following traumatic events may be related to the measurement and operationalization of self-compassion. Self-compassion is most often reported as a composite of its core components or as six individual facets (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification). However, recent arguments put forth by researchers hold that rather than a single factor with six subcomponents, self-compassion should be understood as a combination of two different orientations towards the self during difficult times: compassionate responses to the self and uncompassionate responses to the self (Brenner, Heath, Vogel, & Credé, 2017; Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2016; López et al., 2015). From this perspective, a self-compassionate mindset requires engagement in a greater amount of compassionate responses to the self, including (a) self-kindness, (b) common humanity, and (c) mindfulness, and fewer uncompassionate responses to the self, including (d) self-judgment, (e) isolation, and (f) overidentification (Neff, 2016).

When divided into two different ways of treating the self, compassionate self-responding and uncompassionate self-responding have shown to be uniquely related to mental health outcomes. In a study of U.S. community adults and undergraduate students, higher compassionate self-responding and lower uncompassionate self-responding each predicted greater well-being (Brenner et al., 2018). In this same study, however, compassionate self-responding did not uniquely predict distress, though it did serve to buffer the relationship between uncompassionate self-responding and distress for people high in compassionate self-responding. This buffering effect suggests that people can engage in both compassionate and uncompassionate responses to their own suffering, and that compassionate self-responses are protective even when uncompassionate responses are also present. Körner et al. (2015) found in their sample of German adults that the link between uncompassionate responses towards the self and depressive symptoms was weaker among people who also endorsed higher levels of compassionate responses towards the self. A similar moderating effect of compassionate responses to the self has been found among firefighters, wherein high compassionate self-responding moderated the relationship between uncompassionate self-responding and depressive symptoms, but only among those firefighters with higher-than-average exposure to PTEs (Kaurin, Shöenfelder, & Wessa, 2018).

Among trauma-exposed samples, there has been limited investigation into how the two-factor model of self-compassion relates to PTSD symptom severity or resilience. In a study of trauma-exposed university students (Seligowski, Miron, & Orcutt, 2015), psychological health, a composite of quality of mental health, subjective happiness, and well-being, was positively associated with compassionate responses to the self and inversely associated with uncompassionate responses to the self. These associations held even when controlling for PTSD

symptom severity, suggesting that higher compassionate self-responding and lower uncompassionate self-responding predict the extent to which one maintains or regains adaptive psychological functioning. However, no significant associations were found between PTSD and either compassionate or uncompassionate responses, when controlling for psychological inflexibility. This suggests that while self-compassion may be linked to psychological health, how one internally responds to the self may not be directly related to PTSD symptom severity when controlling for other internal tendencies. To the authors' knowledge, the two-factor model of self-compassion has yet to be examined in a sample of adult sexual assault survivors. Based on previous research, it is likely that higher levels of compassionate self responses and lower levels of uncompassionate self responses will predict resilience. However, the relationship between compassionate and uncompassionate responses to the self and PTSD is less clear and may be dependent upon how self-compassion relates to other internal post-assault processes.

Moderation of Event Centrality by Self-Compassion

The potential for compassionate self responses to ameliorate distress following sexual assault may be dependent not only on the extent to which one practices a greater balance of compassionate responses to the self as compared to uncompassionate responses to the self, but also on the centrality of the traumatic event. Event centrality is an important subjective component of how people make sense of traumatic experiences partially because it addresses the saliency of trauma memories (Berntsen & Rubin, 2006). Subjectively experiencing a traumatic event as highly central is thought to be associated with increased distress partly because the traumatic event has negative implications for one's understanding of self and future events (Berntsen & Rubin, 2006). However, if someone can temper this negative view of self and the future with compassion, it could serve as a buffer against distress. Unfortunately, it may be hard

for a person to both see an event as a turning point in her life and also contextualize that event with self-compassionate responding. Additionally, engaging in high amounts of self-criticism, isolation, and over-identifying with negative emotions may strengthen the extent to which a highly centralized negative event has influence over present functioning. Currently, there is a gap in the literature regarding whether the relationship between event centrality and post-assault psychological outcomes changes depending on a survivor's levels of compassionate and uncompassionate self-responses.

While the interaction between event centrality and self-compassion has not been examined in the context of positive post-assault adjustment, including resilience, insight into their potential interaction can be found in the literature on the saliency of shameful memories. Overall, this literature suggests that compassionate responses towards the self are inversely associated with event centrality, meaning individuals who practice more compassionate responses towards their own suffering are less likely to perceive shameful memories as central to their identity (Ferreira, Matos, Duarte, & Pinto-Gouveia, 2014; Matos, Carvalho, Cunha, Galhardo & Sepodes, 2017). Further, when uncompassionate responses to the self were also considered, they were positively related to the centrality of shameful memories (Ferreira et al., 2014). More importantly, Ferreira and colleagues (2014) found an interaction between event centrality and compassionate responses to the self among individuals with eating disorders. Their results suggest that when a shameful memory is low or moderate in event centrality, high levels of compassionate self-responding weaken the relationship between event centrality and eating disorder symptom severity. However, when a shameful memory is high in centrality, compassionate self responses did not serve as a strong enough protective factor to moderate the relationship between the shameful memory and eating disorder symptom severity. Extending this

concept to the present study, we examined whether the relationship between event centrality and outcomes would be buffered or strengthened by compassionate and uncompassionate responses to the self. An interaction between event centrality and compassionate or uncompassionate self responses has yet to be examined in the context of post-assault mental health outcomes. Our study will also improve upon past research by including an indicator of positive adjustment, resilience, in our moderation modelling. This will provide an investigation into whether or how self-compassion moderates the relationship between event centrality and resilience as well as distress.

Present Study

In the present study we aimed to examine how a number of predictors (i.e., present control, event centrality, compassionate responses to the self, and uncompassionate responses to the self) related to post-assault distress and resilience. We chose to include a measure of resilience because, while the research literature related to sexual assault has included some investigation of positive post-assault adjustment, more commonly researchers focus exclusively on distress or interpret lack of distress as resilience rather than measuring this concept directly (e.g., Steenkamp et al., 2012). We included self-compassion because it has emerged as a potential protective factor following a variety of traumatic experiences, including sexual assault. However, the protective nature of compassionate self responses has yet to be examined in conjunction with present control. Present control is one of the most consistent predictors of positive adjustment following adult sexual assault (Najdowski & Ullman, 2009; Ullman et al., 2007), so to serve as a meaningful protective factor, compassionate responses to the self must be able to predict positive adjustment (i.e., lower PTSD symptom severity and higher resilience) when examined with present control. Additionally, limited previous research with trauma

survivors has been conducted with the two-factor model of self-compassion, which may be a preferable approach to measuring self-compassion (e.g., Brenner et al., 2017). An additional purpose of the present study was to examine the potential moderating role of compassionate and uncompassionate self-responses on the relationships between event centrality and PTSD symptom severity and resilience. Because traumatic memories vary in the extent to which they become centralized into one's sense of self, compassionate and uncompassionate self-responses may interact with event centrality. Based on previous research, we hypothesize the following:

Hypothesis 1: PTSD symptom severity will be negatively associated with present control and compassionate responses to the self and positively associated with event centrality and uncompassionate responses to the self.

Hypothesis 2: Taken together, lower present control, higher event centrality, lower compassionate responses to the self, higher uncompassionate responses to the self, and the interaction terms (event centrality x compassionate responses to the self; event centrality x uncompassionate responses to the self) will predict PTSD symptom severity. Uncompassionate self-responses will be a stronger predictor of PTSD symptom severity than higher compassionate self-responses. Regarding the effects of the interaction terms, the relationship between event centrality and PTSD will be weaker among people higher in compassionate responses to the self and stronger among people higher in uncompassionate responses to the self.

Hypothesis 3: Resilience will be positively associated with present control and compassionate responses to the self and inversely associated with event centrality and uncompassionate responses to the self.

Hypothesis 4: Taken together, higher present control, lower event centrality, higher compassionate responses to the self, lower uncompassionate responses to the self, and the

interaction terms will predict greater resilience. Compassionate self-responses will be a stronger predictor of resilience than uncompassionate self-responses. Regarding the effect of the interaction terms, the inverse association between event centrality and resilience will be weaker for individuals higher in compassionate responses to the self and stronger for individuals higher in uncompassionate responses to the self.

Chapter 2: Method

Participants

The target sample for this study was 250 women over the age of 18 who had experienced one or more incidents of sexual assault in adulthood. Participants were required to identify as a woman, currently be age 18 years or older, and endorse a history of one or more incidents of forced sexual contact at age 16 or older. No other exclusion criteria were used.

The final dataset included 253 women over the age of 18 (M = 33.33, SD = 11.55, range 18-71) who reported one or more incidents of adult sexual assault (ASA). Less than one third of the sample (31.6%) reported only one incident of forced sexual contact in adulthood, while 22.1% reported two incidents, 35.5% reported three to 10 incidents, 6.8% reported 11-20 incidents, and 4.0% reported more than 20 incidents. Most participants (85.4%) reported that they knew the assailant of their most traumatic (or only) assault, with 14.2% reporting that they did not know the perpetrator (14.2%). For those participants who experienced one incident of ASA and provided information about time since the assault (n = 79), the assault occurred an average of 11.24 years ago (SD = 10.39). For participants who reported more than one incident of ASA, an average of 11.89 years (SD = 10.88) had passed since their most recent assault and 8.72 years had passed since their most traumatic assault (SD = 9.93).

The sample was majority White/European American (84.6%), followed by Hispanic-American/Latino (7.5%), Multiracial/Other (4.7%), Asian-American/Pacific Islander (1.2%), Native American/First Nations/Native Alaskan (1.2%), and African-American/Black (0.8%). Individuals were also asked to provide information about their employment status and student status. Most of the participants were not currently students (76.7%), while 15.4% were full-time students and 7.9% were part-time students. A majority of the sample (67.6%) were employed full-time, followed by employed part-time (19.8%) and not employed (12.6%). Participants also

reported their highest level of education. Most participants reported they had earned a college degree (42.7%), had earned a graduate or professional degree (26.9%) or had some college (23.7%). The rest of the sample reported they had earned a high school degree (5.5%), or finished "some high school" (1.2%).

Participants were also given the opportunity to provide information about other traumas they may have experienced. Most participants (n = 220) reported exposure to at least one PTE in addition to forced sexual contact during adulthood. The frequency of exposure to the various PTEs are listed from most-to-least common, and percentages add up to more than 100 because some participants were exposed to multiple events: sudden death of a close family member or friend (55.3%), forced sexual contact in childhood (42.3%), a bad transportation accident (30.4%), being hit or kicked during adulthood hard enough to injure (30.4%), being hit or kicked during childhood hard enough to injure (28.5%), seeing someone die or get badly hurt (26.8%), being attacked with a weapon (23.3%), a natural disaster (21.3%), and seeing something horrible or scary during military service (0.1%).

Measures

Prescreening. Participants answered questions to verify their eligibility for the survey, including information about gender, age, and number of experiences of forced sexual contact in adulthood (i.e., since age 16).

Demographic Items. Additional demographic information collected for the survey included race, education, and employment status.

Trauma history. The Trauma History Screen (THS; Carlson et al., 2011) is a 14-item self-report measure that assesses participants' exposure to 12 possible traumatic events. In the present study, four items that are not consistent with Criterion A of PTSD as defined in the

DSM-5 (American Psychiatric Association, 2013) were omitted. These items refer to an accident at work, a sudden move, abandonment, or an "unidentified event that caused fear or helplessness" (Carlson et al., 2011). The instructions on the THS ask participants to endorse each potentially traumatic event with "yes" if they have experienced the event and "no" if they have not. Items marked "yes" were followed by a prompt for participants to specify the number of times they have experienced the event.

Posttraumatic stress symptoms. The PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) is a 20-item self-report that measures the severity of PTSD symptoms using a timeframe of the past month. Participants were instructed to think about the forced sexual contact they identified in prescreening questions as they made their ratings. Respondents rated how much they have been bothered by each symptom on a scale from 0 (*not at all*) to 4 (*extremely*). Total scores can range from 0 to 80, with higher scores indicative of greater symptom severity. Current recommendations suggest that scores of 33 or above represent probable PTSD (Weathers et al., 2013). Example items include "repeated, disturbing dreams of the stressful experience" and "being super alert or watchful or on guard." The PCL-5 has demonstrated good convergent validity based on its correlation with other measures of PTSD (*r*s = .84-.85; Blevins, Weathers, Davis, Witte, & Domino, 2015). Previous research using the PCL-5 with sexual assault survivors has reported good internal consistency reliability, $\alpha = .95$ (Hamrick & Owens, 2018). In the present study, the internal consistency reliability was $\alpha = .95$.

Resilience. The Connor-Davidson Resilience Scale-10 (CD-RISC-10; Campbell-Sills & Stein, 2007) is a 10-item self-report measure of resilience based on the 25-item Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003). In the present study, a separate screen that preceded the measure instructions included a prompt that participants should

think about their previously identified experience of forced sexual contact when making their ratings. The standard measure instructions, which ask participants to rate how much each statement applies to how they have felt over the past month on a scale from 0 (*not at all true*) to 4 (*true nearly all of the time*), were then displayed along with the measure items. Total scores can range from 0 to 40, and higher scores indicate greater resilience. Example items include "I am able to adapt when changes occur" and "I can deal with whatever comes my way." The 25-item CD-RISC has shown good convergent validity based on a positive association with hardiness and a negative association with perceived stress (Connor & Davidson, 2003). The CD-RISC-10 has demonstrated good construct validity, as high resilience has been shown to buffer the relationship between childhood maltreatment and psychopathology (Campbell-Sills & Stein, 2007). Previous research using the CD-RISC-10 in a trauma-exposed sample reported good internal consistency reliability, $\alpha = .87$ (McCanlies, Mnatsakanova, Andrew, Burchfiel, & Violanti, 2014). The internal consistency reliability in the present study was $\alpha = .89$.

Present control. The Present Control subscale of the Perceived Control Over Stressful Events Scales (PCOSES; Frazier et al., 2011) is an 8-item scale used to measure perceptions of present control. Participants were asked to rate items according to how they have felt over the past month on a Likert-type scale from 1 (*strongly disagree*) to 4 (*strongly agree*) and to make their responses in reference to their most traumatic experience of forced sexual contact they identified previously. Total scores can range from 8 to 32, and higher scores are consistent with greater levels of perceived present control. An example item is "I have control over how I think about the event." The present control subscale has demonstrated convergent validity by its pattern of correlations with measures of related constructs, including perceived control over internal states and general self-efficacy (Frazier et al., 2011). Previous research (Frazier et al.,

2011) has reported good internal consistency reliability for the present control subscale (α = .77-.82). The internal consistency reliability in the present study was α = .85.

Event centrality. The Centrality of Events Scale (CES; Berntsen & Rubin, 2006) is a 7-item self-report measure of the extent to which a traumatic or stressful event has become central to one's identity. Participants were instructed to think about the most traumatic experience of forced sexual contact they identified previously when rating each item. Participants responded on a 5-point scale from 1 (*totally disagree*) to 5 (*totally agree*). Total scores can range from 7 to 35, and higher scores indicate higher levels of event centrality. Example items include "this event has become a reference point for the way I understand myself and the world" and "this event was a turning point in my life." The scale has good face validity and construct validity; CES scores correlate more strongly with theoretically-relevant constructs of posttraumatic stress symptoms and shame than less closely related constructs like depression and anxiety (Bernsten & Rubin, 2006; Gehrt, Bernsten, Hoyle, & Rubin, 2018). The CES has demonstrated good internal consistency in trauma-exposed samples (α = 92; Brooks et al., 2017) and Cronbach's alpha was .92 in the present study.

Self-compassion. The Self-Compassion Scale (SCS; Neff, 2003b) is a 26-item self-report measure of self-compassion. Each item is rated on a 5-point scale from 1 (*almost never*) to 5 (*almost always*) in regards to how the participant treats themselves during difficult times. The SCS has demonstrated good construct and divergent validity based on its pattern of associations with measures of theoretically-related constructs (Neff, 2003b). For the present study, the three facets of self-compassion related to compassionate self-responses (i.e., self-kindness, mindfulness, and common humanity) and the three facets of self-compassion related to uncompassionate self-responses (i.e., self-judgment, overidentification, and isolation) were

summed separately to create two factors: compassionate responses to the self and uncompassionate responses to the self. Similar studies have found that this division appropriately captures the two-dimensional nature of self-compassion, and that the two-factor model provides incremental validity above and beyond considering the six component factors of self-compassion independently (e.g., Brenner et al., 2017). Both scales have a total score that can range from 13 to 65, with higher scores representing greater compassionate self-responding or greater uncompassionate self-responding, respectively. An example item from each scale includes "I try to be patient towards those aspects of my personality I don't like" and "when I'm feeling down I tend to obsess and fixate on everything that's wrong." Both compassionate self-responses and uncompassionate responses have demonstrated adequate internal consistency in previous studies, $\alpha = .86$ and $\alpha = .90$, respectively (Lopez et al., 2015). In the present study, the internal consistency reliability of each scale was $\alpha = .93$.

Procedure

All procedures were approved by the University of Tennessee's Institutional Review Board prior to start of data collection. Participants were recruited by soliciting organizations that support sexual assault survivors to post a research announcement to their social media pages, websites, physical locations, or to disseminate it via a listserv. In total, 820 organizations within the United States were contacted and invited to share the research announcements. The research announcement provided a link to the anonymous online survey. Participants who accessed the survey first encountered the consent form; participants were required to affirmatively consent prior to accessing the prescreening questions. Contact information for a national sexual assault crisis line was provided on the consent form, and participants were prompted to print this information for future reference.

Prescreening questions included those that verified participant age, gender, and ASA history. The question regarding ASA history came from the THS (Carlson et al., 2011), and asked how many times the participant has "been forced or made to have sexual contact—as an adult (i.e., age 16 or older)." It was left to the participant to interpret whether her experience of sexual assault met this description. Individuals who did not meet the study criteria based on their responses to the prescreening questions were directed to a thank you page, which again provided contact information for a national sexual assault crisis line. Each participant who positively identified as a woman aged 18 or older with one or more ASA experiences was asked to complete additional questions regarding their history of ASA, including the time passed since their most traumatic assault and whether or not they knew the perpetrator. Participants who reported more than one experience of ASA were also asked to indicate time passed since their most recent assault.

After the prescreening, participants completed the online survey in the following order: demographic information, THS, CD-RISC, PCL-5, CES, PCOS, and SCS. Following completion of the survey, participants were directed to a thank you page with crisis resources and given the opportunity to enter a drawing for one of twenty $25 electronic gift cards. To receive a gift card participants needed to provide a valid email address, but no other identifying information. The database that contained the email addresses was separate from database housing the survey responses to maintain the anonymity of the survey data. Once the drawing was complete, all email addresses were permanently erased.

Data Analysis

SPSS software (version 23.0) was used to conduct data analysis. Cases were excluded if participants did not provide complete information. Among all qualified participants ($N = 316$),

36 individuals who dropped out without providing any data on the survey measures, 21 who left one or more entire measures blank, and 6 individuals who skipped more than 7 items on the SCS were removed from the dataset. Among the final dataset, the amount of missing item-level data on the survey measures was small (0.12%). We used mean substitution to handle the missing data, as guidelines suggest that if less than 5% of data are missing mean substitution performs adequately (Tabachnick & Fidell, 2007).

Range, means, and standard deviations of all continuous variables and internal consistency reliability of scales were calculated. All predictor and criterion variables were checked for their appropriateness for multivariate analysis by examining skewness, kurtosis, and multicollinearity; all were in appropriate ranges. Prior to testing our hypotheses, we used t-tests to compare means on PTSD, resilience, and all predictor variables across survivors who reported a history of child sexual abuse (CSA) and those who did not, as well across participants who reported one versus multiple incidents of ASA. A history of CSA as well as the experience of multiple sexual assaults during adulthood are each often associated with higher levels of PTSD symptom severity (see Campbell et al., 2009, for review).

Hypotheses 1 and 3 were examined using Pearson's correlational analysis. Hypotheses 2 and 4 were tested using two hierarchical linear multiple regressions, one with PTSD symptom severity as the outcome variable and one with resilience as the outcome variable. In step one of the PTSD regression model, history of CSA and multiple ASA were entered as control variables and predictors were present control, event centrality, compassionate responses to the self, and uncompassionate responses to the self. In step one of the resilience regression model, no control variables were entered and the same predictors were included (i.e., present control, event centrality, compassionate responses to the self, and uncompassionate responses to the self). In

step two of both regression models, the interaction terms (event centrality x compassionate responses to the self and event centrality x uncompassionate responses to the self) were added as additional predictors. Terms for the interaction variables were centered prior to entering them in the regression. We examined whether the inclusion of the interaction terms led to a statistically significant increase in R^2, in which case moderation is said to have occurred (Keith, 2015). Moderation effects in social science research are often small, although those derived from theoretical hypotheses are likely to be larger than those based on comparison of demographic differences (Aberson, 2010). Using a conservative estimate of the potential R^2 change caused by the addition of the interaction effect to the regression, a suggested sample of 240 was needed to achieve 80% power with alpha = .05 (Aberson, 2010).

We planned to follow Keith's (2015) approach to compare the relative predictive power of compassionate and uncompassionate responses to the self on outcomes if both terms were significant. In this approach, a comparison is made between the sum of the standardized predictors and the difference between the standardized predictors. If the beta for the difference between the predictors is significant when the sum and difference scores are included in the regression in place of the original predictors, it means the betas for the predictors have a statistically significant difference.

To further probe significant interaction effects, we planned to use Hayes' (2012) PROCESS macro (Model 2) to create a series of regression lines of the criterion variable on event centrality plotted at different values of the moderators. These values would be set at the mean and one standard deviation above and below the mean. The regression equation would include the terms for the main effects and the interaction terms, with the corresponding regression coefficients and regression constant (Aiken & West, 1991).

Chapter 3: Results

The ranges, means, standard deviations, and correlations between all predictor and criterion variables are presented in Table 1. Using the current suggested cut-off of 33 for the PCL (Weathers et al., 2013), 57.7% of the sample met criteria for probable PTSD. The sample also reported a level of resilience (24.43 ± 7.46) similar to the average resilience found in a sample of combat-exposed veterans seeking treatment at a Veterans Administration healthcare center (23.6 ± 7.8; Wingo et al., 2017) and lower than that of a community sample (31.78 ± 5.41; Campbell-Sills, Ford, & Stein, 2009).

Preliminary Analyses

We conducted a series of independent t-tests to determine whether the mean values for our outcome and predictor variables were significantly different across participants with a history of CSA (coded as 1) compared to those without a history of CSA (coded as 0). Participants with a history of CSA comprised 42.3% of the sample (n = 107). A significant difference was found between the groups on PTSD symptom severity ($t(251) = 2.91$, $p = .004$), such that participants with a history of CSA were more likely to report higher symptomology. No significant differences were found in resilience ($t(251) = -1.14$, $p = .26$), present control ($t(251) = -1.29$, $p = .20$), event centrality ($t(251) = 1.62$, $p = .11$), compassionate responses to the self ($t(251) = -1.23$, $p = .22$), or uncompassionate responses to the self ($t(251) = 1.31$, $p = .19$).

We also compared participants who reported one incident of adult sexual assault (coded 0) to those with multiple incidents of adult sexual assault (coded 1) on our predictor and criterion variables using a series of independent group t-tests, following a method similar to that used by Ullman and Brecklin (2003). Over half of the sample (68.3%) reported more than one incident of forced sexual contact in adulthood. Significant differences were found in PTSD symptom

severity ($t(251) = 3.77$, $p < .001$) and event centrality ($t(251) = 2.36$, $p = .02$), such that participants who reported multiple incidents of adult sexual assault (ASA) were more likely to report greater PTSD symptom severity and higher event centrality. No significant differences were found in resilience ($t(251) = .12$, $p = .90$), present control ($t(251) = .05$, $p = .42$), compassionate responses to the self ($t(251) = .83$, $p = .45$), or uncompassionate responses to the self ($t(251) = .83$, $p = .52$). Based on these t-test results, history of CSA and multiple ASA were used as control variables in the regression model for PTSD symptom severity but not for resilience.

Associations with and Prediction of PTSD

The first hypothesis was tested by calculating the correlations between PTSD and all predictor variables (Table 1). Significant negative correlations were found between PTSD and both present control and compassionate responses to the self ($p < .001$). Significant positive correlations were found between PTSD, event centrality, and uncompassionate responses to the self ($p < .001$). Thus, overall, hypothesis 1 was supported by the data. Although not originally included in our hypotheses, history of CSA and multiple incident ASA were also significantly positively associated with PTSD severity.

The second hypothesis was tested using hierarchical multiple linear regression with PTSD symptom severity as the outcome. The moderation hypothesis was not supported, although the overall regression model predicting PTSD was significant and many of the predictors were significant in the predicted direction. The overall model explained 58% of the variance, ($F(6, 246) = 59.94$, $p < .001$, Adj. $R^2 = .584$). In step one, history of CSA was significant at $p < .05$, and multiple ASA, present control, event centrality, and uncompassionate responses to the self were significant predictors at $p < .001$. Compassionate responses to the self was not a significant

predictor (p = .864). In the model, a history of CSA, the experience of multiple sexual assaults during adulthood, lower present control, higher event centrality, and higher uncompassionate responses to the self predicted greater PTSD symptom severity. The direction of the relationships between present control, event centrality, and uncompassionate responses to the self with PTSD symptom severity supported our hypothesis.

Inclusion of the interaction terms (event centrality x compassionate responses to the self and event centrality x uncompassionate responses to the self) in step two of the model did not lead to a significant change in R^2 (ΔR^2 = .009, p = .076) and neither of the interaction terms significantly predicted PTSD symptom severity. Given the lack of significant findings for interaction terms, we did not conduct the planned analysis to compare the relative predictive power of compassionate self responses and uncompassionate self responses with regard to PTSD symptom severity.

Associations with and Prediction of Resilience

The third hypothesis was tested by calculating the correlations between resilience and all predictor variables (Table 1). Significant positive correlations were found between resilience and both present control and compassionate responses to the self (p < .001). Significant negative correlations were found between resilience and event centrality and uncompassionate responses to the self (p < .001). Thus, hypothesis 3 was supported by the data.

The fourth hypothesis was tested using hierarchical multiple linear regression with resilience as the outcome. The moderation hypothesis was not supported. However, the overall model was significant and explained 51% of the variance, (F(6, 246) = 44.98, p < .001, Adj. R^2 = .512). In step one, present control and compassionate responses to the self were the only significant predictors (p < .001). Higher levels of present control and compassionate responses to

the self predicted greater resilience, as hypothesized. Event centrality (p = .93), and uncompassionate responses to the self (p = .08) were not significant predictors of resilience.

In step two, inclusion of the interaction terms (event centrality x compassionate responses to the self and event centrality x uncompassionate responses to the self) did not lead to a significant change in R^2 (ΔR^2 = .010, p = .081) and neither of the interaction terms significantly predicted resilience. Therefore, the planned analysis to compare the relative predictive power of compassionate self responses and uncompassionate self responses with regard to resilience was not conducted.

Chapter 4: Discussion

The purpose of the present study was to investigate the relationships between four internal post-assault processes (i.e., present control, event centrality, compassionate responses to the self, and uncompassionate responses to the self) and post-assault mental health (i.e., PTSD symptom severity and resilience). In addition to looking at a number of predictors, we aimed to explore whether compassionate responses to the self meaningfully relates to outcomes when present control is included in the regression model, as present control has shown to be a strong predictor of positive post-assault adjustment (Najdowski & Ullman, 2009; Ullman et al., 2007).

Another goal of the present study was to use the two-factor model of self-compassion to compare the relative power of compassionate versus uncompassionate responses to the self in predicting post-assault mental health outcomes. Recent studies have suggested that each pole of self-compassion is uniquely associated with distress and well-being, with uncompassionate self responses more likely to predict distress and compassionate self-responses more likely to predict positive indicators of mental health (Brenner et al., 2018). However, the two-factor model of self-compassion has not yet been extensively examined with trauma-exposed samples. Of the two studies we could locate that used this model in relation to a trauma-exposed sample, one was conducted with undergraduate psychology students, who may not be representative of community-recruited trauma survivors (Seligowski et al., 2015). The second (Kaurin et al., 2018) was exclusive to firefighters, whose exposure to trauma is often job-related and thus may differ from ASA in levels of controllability and unpredictability. Therefore, the present study extends prior research by attempting to ascertain whether each component of self-compassion uniquely predicted mental health outcomes when examined with other internal processes (i.e., present

control and event centrality) in a community, volunteer sample of women who have experienced ASA.

Finally, we wanted to test whether each factor of self-compassion moderates the relationship between event centrality and post-assault mental health outcomes. Viewing a traumatic event as central to one's life story is presumed to result in negative outcomes. However, holding this view while simultaneously practicing higher compassionate self-responding and lower uncompassionate self-responding could alter the extent to which event centrality impacts mental health outcomes. Overall, our correlational hypotheses were supported, our hypotheses regarding significant predictors of PTSD and resilience were partially supported, and there was no evidence of moderation.

Correlations with and Prediction of PTSD Symptom Severity

In support of our first hypothesis, significant inverse associations were found between PTSD symptom severity and both present control and compassionate responses to the self while significant positive associations were found between PTSD symptom severity and both event centrality and uncompassionate responses to the self. Additionally, based on preliminary analyses we included history of CSA and multiple ASA in our correlational analysis. We found that both having a history of CSA and having more than one experience of ASA were associated with higher levels of PTSD symptoms. Most of these correlational findings are consistent with past research with trauma survivors (Najdowski & Ullman, 2009; Robinaugh & McNally, 2011; Seligowski et al., 2015). These earlier correlational findings typically examined only a single construct of interest included in the current study and its association with PTSD, and only one (Najdowski & Ullman, 2009) was specific to adult sexual assault. While we could not locate other studies that examined the relationship between uncompassionate responses to the self and

PTSD symptom severity based on a DSM-5 measure of PTSD, the finding that uncompassionate responses to the self correlates with indicators of distress in trauma-exposed samples is consistent with other research that used depression as the measured mental health outcome (Kaurin et al., 2018).

In our regression model predicting PTSD symptom severity, our results partially supported our second hypothesis. As predicted, lower present control, higher event centrality, and higher uncompassionate responses to the self were significant predictors of higher PTSD symptom severity. Having a history of CSA and experiencing multiple incidents of ASA were also significant predictors of higher PTSD symptom severity. This pattern of relationships among CSA, multiple ASA, and PTSD severity is consistent with evidence that exposure to traumatic events has cumulative effects, particularly exposure to sexual violence (Kessler et al. 2014).

Our results are in line with previous research that indicated that present control (Frazier et al., 2011) and event centrality (Robinaugh & McNally, 2011) predict PTSD in the directions found in this study. The current study improves upon past research into the relationship among present control and PTSD in sexual assault survivors (Najdowski & Ullman, 2009) by using an updated measure of present control that has higher internal consistency reliability. Additionally, our results add to the literature which has previously found positive associations between event centrality and PTSD symptom severity among combat veterans (Brown et al., 2010), child abuse survivors (Robinaugh & McNally, 2011), and in mixed trauma samples (Boals & Schuettler, 2010). Taken together, our study considered two robust predictors of PTSD (i.e., present control and event centrality) simultaneously in a community-based sample of sexual assault survivors,

furthering the evidence that lower present control and higher event centrality are associated with increased distress across trauma types and populations.

The finding that uncompassionate responses to the self significantly predicted PTSD is not consistent with one previous study that examined the relationship between the two-factor model of self-compassion and PTSD symptoms (Seligowski et al., 2015). This difference in results could be due to the fact that Seligowski and colleagues' study used a measure based on DSM-IV-TR criteria for PTSD (American Psychiatric Association, 2000). Other research has shown that the relationship between overall self-compassion and PTSD symptoms may differ when DSM-5 criteria are used as compared to DSM-IV-TR criteria (Maheux & Price, 2015). In DSM-5, symptoms related to numbing were expanded to include aspects of self-blame and anhedonia (Friedman, 2013). As noted by Maheux and Price (2015), this shifts PTSD away from an anxiety-based response to include more overlap with depression. Uncompassionate responses to the self have been shown to predict depressive symptoms (Kaurin et al., 2018), so the stronger relationship between uncompassionate responses to the self and PTSD symptoms based on DSM-5 measurement could be related to the current conceptualization of PTSD to include negative alterations in mood.

It is also important to note that uncompassionate responses to the self was still a significant predictor of distress even though we also included other strong predictors of PTSD (i.e., present control and event centrality). This supports continued efforts to understand how lack of compassion impacts recovery from traumatic events. Overall, our findings suggest that women's previous exposure to sexual violence, perceived ability to control recovery, subjective construal of the event as it relates to identity, and the extent to which she is uncompassionate towards herself may all explain variations in PTSD severity following sexual assault.

Another part of our second hypothesis stated that the relationship between uncompassionate responses to the self and PTSD symptom severity would be stronger than the relationship between compassionate responses to the self and PTSD. However, we were unable to test their comparative strength because compassionate responses to the self did not significantly predict PTSD in the present study. While not in line with our hypothesis, this finding could be due to the fact that the relationship between compassionate self-responses and PTSD may be indirect, as has been shown in studies that consider self-compassion as a combination of compassionate and uncompassionate self responses (e.g., Barlow et al., 2017; Hamrick & Owens, 2018). One rationale for examining self-compassion as a two-factor model is that compassionate self-responses and uncompassionate self-responses are differentially related to outcomes, with compassionate self-responses linked more closely to well-being and uncompassionate self-responses linked more closely to distress (Brenner et al., 2018). Our results are consistent with the premise that uncompassionate self-responses are more strongly related to distress than compassionate self-responses.

Finally, moderation of the relationship between event centrality and PTSD symptom severity by either compassionate self responses or uncompassionate self responses was not significant. Higher levels of uncompassionate responding did not strengthen the association between event centrality and PTSD symptom severity, as expected. While each were independently related to PTSD symptoms, we did not find that viewing a sexual assault as highly salient to one's life and identify led to worse outcomes when also engaging in high levels of self-judgment, isolation, and absorption with negative emotions. In addition, higher levels of compassionate self responses did not attenuate the relationship between event centrality and distress. It is possible that behaving in a compassionate manner towards the self is not strong

enough to buffer against negative outcomes once a sexual assault experience has become highly centralized in one's identity.

Correlations with and Prediction of Resilience

In support of our third hypothesis, significant positive associations were found between resilience and both present control and compassionate responses to the self, while significant negative associations were found between resilience and both event centrality and uncompassionate responses to the self. The positive associations between resilience and both present control and compassionate self responses as well as the inverse relationship between resilience and uncompassionate self responses are unique to the present study. These results extend previous findings which showed a similar pattern of relationships between the two factors of self-compassion and overall psychological well-being in trauma-exposed individuals (Seligowski et al., 2015). The inverse bivariate relationship we found between event centrality and resilience at has been inconsistent in previous research. Our result is consistent with one study of trauma survivors that used a similarly brief measure of resilience (Wolfe & Ray, 2015).). However, even within the present study this relationship was found only at the bivariate level and was not significant in regression analysis.

In our regression model predicting resilience, our results partially supported our fourth hypothesis. As predicted, higher present control and higher compassionate responses to the self were significant predictors. The finding that present control positively predicts resilience is consistent with previous research (e.g., Frazier et al., 2011; Frazier et al., 2012) that found that present control predicts better post-trauma outcomes in mixed stressor samples. However, much of the past research has either defined positive outcomes as fewer symptoms of distress (e.g., Frazier et al., 2005; Frazier et al., 2011), used a single item with unknown psychometric

properties to measure positive adaptation (Najdowski & Ullman, 2009), examined overall life satisfaction rather than trauma-related adaptation (Frazier et al., 2012), and included participants with stressful experiences that do not satisfy Criterion A for PTSD (Frazier et al., 2012). The present study marks an improvement upon this past research by using a reliable measure of resilience that participants rated in relation to their recovery from one specific Criterion A traumatic event, adult sexual assault.

There have been fewer investigations of how compassionate self responses relate to positive mental health following traumatic experiences, and the authors could identify only one study that used a measure of positive post-trauma outcomes along with the two-factor model of self-compassion. Results of this research found that compassionate self-responses positively predicted psychological health (Seligowski et al., 2015). In Seligowksi and colleagues' (2015) study, however, none of the positive indicators of mental health (i.e., quality of mental health, subjective happiness, and well-being) were specifically tied to the trauma exposure, whereas our measure of resilience was preceded by a prompt for participants to make their ratings in relation to their most traumatic experience of forced sexual contact in adulthood.

While significant relationships were found between event centrality, uncompassionate responses to the self, and resilience at the bivariate level, these associations were not significant when considered together in the regression model. The fact that the inverse relationship between event centrality and resilience was not maintained in the regression analysis is in contrast to previous research with college women in which event centrality was a significant predictor of resilience (Wolfe & Ray, 2015). However, other research (e.g., Wamser-Nanny et al., 2018) has found that event centrality does not predict resilience. It is possible that the extent to which one views a traumatic event as a turning point may not relate to how well one "bounces back" from

trauma in a direct manner. Also in opposition to our hypothesis was the fact that levels of uncompassionate responses to the self did not predict resilience. This is surprising, as harsh self-criticism, feelings of isolation, and over-identification with negative emotions theoretically function as barriers to resilient functioning and previous research has found an inverse relationship between uncompassionate self-responding and psychological health (Brenner et al., 2018; Seligowski et al., 2015).

Given that uncompassionate responses to the self was not a significant predictor of resilience, we did not conduct follow-up tests to determine the relative predictive strength of compassionate and uncompassionate responses to the self in our model predicting resilience. When viewed in conjunction with results from our regression predicting PTSD, this provides further support that compassionate self responses predict better post-trauma outcomes, here defined as resilience, while uncompassionate responses more robustly predict distress.

Overall, only the protective internal processes we considered (i.e., present control and compassionate self responding) were related to resilience, whereas processes thought to be maladaptive (i.e., event centrality and uncompassionate self responding) were not significant predictors of resilience. This is consistent with the ideas articulated in the theory of social mentalities, whereby positive self-talk is likely to result in positive outputs while negative self-talk is likely to result in stress reactions (Gilbert, 2000). Additionally, the finding that both present control, an established predictor of positive outcomes, and compassionate responses to the self were significant predictors of resilience suggests that compassionate self responses may be an important protective factor following sexual assault. While compassionate responses to the self did not predict reduced PTSD symptom severity, it did predict increased resilience. Thus, compassionate self-responses may help contribute to positive post-assault functioning even in the

face of continued distress. In our study, the positive internal processes of present control and compassionate self-responses alone predicted 50% of the variance in resilience. It is possible that in the process of recovery from sexual assault, resilience is more strongly associated with internal processes that bolster self-soothing rather than internal processes related to distress and the internal threat system. Treating oneself with kindness, finding support in the presence of others, observing negative emotions with distance, and focusing on what one can control in the present as these tendencies may bolster this self-soothing and aid in recovery.

Finally, no significant moderation of the relationship between event centrality and resilience by either compassionate self responses or uncompassionate self responses was found. In other words, the relationship between centralizing an experience of sexual assault and resilience was not changed by participants' levels of compassionate and uncompassionate responding. This was likely because the relationship between event centrality and resilience was not significant in the present study.

Limitations

A number of limitations to the present study should be considered when interpreting the findings. Given that the study was cross-sectional, correlational research, we are not able to establish temporal relationships between our variables nor can we draw causal conclusions. Additionally, in spite of our best efforts to contact sexual assault crisis organizations from across the country and specifically request the participation of agencies that serve women of color, the final sample is relatively homogenous in terms of race (White) and education (college degree or higher). Women of various races, ethnicities, and socioeconomic statuses are exposed to sexual assault, and while most studies have not found differences in post-assault mental health outcomes based on race/ethnicity (Campbell et al., 2009), it is still important to understand that

the experience of ASA may differ in ways related to women's intersecting identities (American Psychological Association, 2007). Thus, caution should be used when attempting to generalize the results of our study to populations who are less well-represented in this sample. Additionally, participants in the study self-selected to participate, and systematic differences may exist between the women who chose to participate and those who did not. In this case, it is possible that the research announcement itself may have in some way appealed particularly to White, educated women. Finally, we collected limited information about assault characteristics. Thus, we were unable to examine whether the internal post-assault processes we investigated are differentially related to various assault characteristics (e.g., rape versus attempted rape, level of post-assault injury, gender of the perpetrator, etc.). However, since objective features of assault are only inconsistently related to outcomes (Campbell et al., 2009), it is unclear the extent to which this limits our findings.

Future Research Directions

The relationships we found among present control, event centrality, self-compassion, and outcomes of PTSD and resilience require replication utilizing a more racially, ethnically, and educationally diverse sample of sexual assault survivors. Additionally, longitudinal investigation could provide more insight with regard to the temporal relationships between our variables and help further separate factors that contribute to PTSD symptom severity and resilience. Given that distress and resilience were related in different ways to most of our predictor variables, we also recommend that future intervention research intended to explore compassion-focused therapies include measures of resilience or positive adaptation in addition to measures of symptom reduction.

While our moderation hypotheses were not supported by the data, this is not conclusive evidence that there is not an interaction between how central an event is to one's identity and self-compassion. In our regression predicting resilience, the interaction term for event centrality and compassionate self responses was trending towards significance (p = .078). It is possible that with a larger sample the moderation would have been significant. In social science research, moderation effects are often small and may necessitate the use of large samples to detect those effects that do exist (Aberson, 2010). Future research may attempt to investigate whether interactions between self-compassion and event centrality would be present among other types of traumatic events, particularly non-interpersonal traumas as these may be less likely to be centralized into identity (Reiland & Clark, 2017).

Finally, we did not include a measure of self-blame in the present study, but past research (Hamrick & Owens, 2018) has found that self-blame may also be an important internal factor related to distress following sexual assault and may be effectively targeted by interventions that increase self-compassion (Au et al., 2017). How present control, event centrality, and compassionate and uncompassionate self responses are related to self-blame among ASA survivors merits exploration in future studies.

Clinical Implications

Even with the limitations of our study, the findings have implications for clinical intervention with ASA survivors who share similar characteristics to the women who comprised our sample. Overall, decreasing distress and increasing resilience may be different targets for intervention and require different techniques aimed at addressing various internal processes. However, while reducing distress and building resilience may be different process, increasing survivors' sense of control over their present experience may be a way to target both outcomes.

Cognitive interventions, like Cognitive Processing Therapy (CPT; Resick, Monson, & Chard, 2017), explicitly incorporate issues of control towards the end of treatment, but our findings support the notion that bolstering women's sense of their ability to control their responses in the present should be attended to throughout treatment.

When targeting symptom reduction, helping women decrease their vulnerability factors in the form of event centrality and uncompassionate self-responding is also indicated. To do so, clinicians can address the extent to which a client has construed the event as a central turning point and help her reconsider the meaning she has made of the event in relation to her self-concept. Decreasing uncompassionate self-responding, like self-criticism, feelings of isolation in one's experience, and over-identifying with negative emotions are often a part of existing cognitive treatments. While the reduction of PTSD symptoms is an important treatment goal, our findings also suggest that building resilience may take a different set of skills and require increased focus on bolstering protective factors rather than solely removing vulnerability factors. When the aim is helping survivors find a sense of resiliency, incorporating activities that help build their ability to practice compassionate self-responding may be indicated.

Conclusions

The present study provides continued support for investigation of self-compassion as an important process to understand in research and treatment related to sexual assault. Compassionate and uncompassionate self responses each predicted outcomes even though other well-established predictors like present control and event centrality were also considered. We did not find support that the two factors of self-compassion moderated the relationships between event centrality and mental health. While this is not conclusive evidence that moderation does not occur in these relationships, it is possible that the relationship between how central an event

is to one's identity and mental health is not affected directly by one's tendency towards self-compassion.

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Appendix

Table 1

Range, means, standard deviations, and correlations among variables (N=253)

Measure	Range	Mean	*SD*	1	2	3	4	5	6.	7.
1. PTSD	0-79	36.44	19.18	--	--	--	--	--	--	--
2. Resilience	6-40	24.43	7.46	-.546***	--	--	--	--	--	--
3. CSA	--	--	--	.180**	-.071	--	--	--	--	--
4. Multiple ASA	--	--	--	.232***	.008	.100	--	--	--	--
5. PC	9-32	23.68	5.00	-.655***	.535***	-.081	-.050	--	--	--
6. EC	7-35	24.97	7.76	.567***	-.316***	.102	.148*	-.496***	--	--
7. CSR	13-65	37.96	11.09	-.394***	.647***	-.078	.048	.400***	-.259***	--
8. USR	13-65	47.30	11.53	.569***	-.534***	.083	.041	-.443***	.503***	-.666***

*$p < .05$

**$p < .01$

***$p < .001$

(Note: PC= present control, EC= event centrality, CSR = compassionate responses to the self, USR = uncompassionate responses to the self, CSA= History of CSA)

Table 2

Hierarchical regression analyses predicting PTSD and resilience

	PTSD[a]			Resilience[b]		
Predictors	*B*	SE	β	*B*	SE	β
Step 1						
History of CSA	3.419	1.592	.088*	---	---	---
Multiple ASA	6.674	1.706	.162***	---	---	---
Present Control	-1.648	.190	-.429***	.464	.081	.311***
Event Centrality	.454	.127	.184***	.002	.054	.002
Compassionate Self-responses	.017	.098	.010	.313	.041	.465***
Uncompassionate Self-responses	.464	.102	.279***	-.057	.043	-.088
Step 2						
History of CSA	3.463	1.582	.089*	---	---	---
Multiple ASA	6.625	1.695	.161***	---	---	---
Present Control	-1.597	.190	-.416***	.444	.081	.297***
Event Centrality	.463	.128	.187***	.005	.054	.005
Compassionate Self-responses	.016	.097	.009	.309	.041	.460***
Uncompassionate Self-responses	.517	.104	.311***	-.078	.044	-.120
Event Centrality x Compassionate self-responses	-.012	.012	-.056	.009	.005	.114
Event Centrality x Uncompassionate self-responses	.009	.011	.048	.001	.005	.017

Note. *$p < .05$, ** $p < .01$, *** $p < .001$

[a]Adj. $R^2 = .589$, ΔR^2 Step 1 = .594, ΔR^2 Step 2 = .009

[b]Adj. $R^2 = .512$, ΔR^2 Step 1 = .513, ΔR^2 Step 2 = .010

Research Announcement

Research Participation Request

Participants are needed for a research study examining how women make sense of their experience of sexual assault and manage their recovery. If you are a woman aged 18 years or older and have experienced one or more incidents of unwanted sexual contact as an adult (i.e., when you were 16 years or older), you are eligible to participate. Your responses to the survey items will be kept confidential. The online survey takes approximately 20-30 minutes to complete. Please click this link connect to the consent form and questionnaire:

https://utk.questionpro.com/t/AOlnIZc5aL

To thank you for your participation, you may enter an optional drawing awarding a $25 gift card to 20 randomly selected persons. If you wish to be entered into the drawing without participating in the study, please send an email to lhamrick@vols.utk.edu requesting to do so. This research protocol has been reviewed and approved by the Institutional Review Board for protection of human subjects at the University of Tennessee UTK IRB-18-04792-XP, expiration 11/06/2019.

Thank you in advance for your help with this project! For more information contact:

Lauren Hamrick, M.A.
University of Tennessee
Department of Psychology
lhamrick@vols.utk.edu

Gina P. Owens, Ph.D. (Faculty Advisor)
University of Tennessee
Department of Psychology
gowens4@utk.edu

Consent Form

Dear Participant:

You are invited to participate in a research study conducted by Lauren Hamrick, M.A., a doctoral student at the University of Tennessee. The purpose of this study is to obtain information about how individuals make sense of experiences of sexual assault that occur during the adult years.

To be eligible for this study, you must be a woman, at least 18 years or older, and have experienced sexual assault since at the age of 16 or older. Your participation in this study is completely voluntary. You may choose not to participate or discontinue your participation at any time. Participation or non-participation will not impact the care you receive from any service agency.

If you choose to participate, you will be asked to complete an online questionnaire that will take approximately 20-30 minutes to complete. Any information you provide will be kept confidential. Data from the study will be summarized and presented in group form. Some individuals may experience discomfort if certain items cause the recall of events or emotions that they find distressing or when answering questions about information they consider sensitive. You do not have to answer any questions that you do not want to answer. If you do experience any distress or discomfort as a result of your participation, we encourage you to contact your local sexual assault services agency, or the Rape, Abuse, & Incest National Network, which staffs its phone lines 24 hours per day:

Rape, Abuse, & Incest National Network (RAINN) https://rainn.org
1-800-656-HOPE (4673)

The information you provide may be helpful in increasing our understanding of sexual assault survivors' experiences and mental health, although the information collected may not benefit you directly. To thank you for your participation, you may enter an optional drawing awarding a $25 gift card to 20 randomly selected persons. The $25 gift cards are to a national retailer, such as Target or Walmart. The link to the drawing is separate from your survey information so that we can assure confidentiality of your survey responses. If you wish to be entered into the drawing without participating in the study, please send an email to lhamrick@utk.edu requesting to do so with the subject line "gift card entry." The winners of the drawing will be notified within four weeks of the completion of data collection. Once drawing winners are selected and gift cards are sent electronically, all email addresses will be deleted.

If you have questions or comments at any time about this research project, you may contact the researcher, Lauren Hamrick, at lhamrick@vols.utk.edu, or her faculty advisor, Dr. Gina Owens, at gowens4@utk.edu or 865-974-2204. If you would like to receive a brief written summary of the results when the study is complete, please send a request to Lauren Hamrick via e-mail (please write "Moderation Study Results" in the subject line). This protocol has been reviewed and approved by the Institutional Review Board for protection of human subjects at the University of Tennessee-Knoxville. If you have questions about your rights as a participant, you may contact the University of Tennessee IRB Compliance Officer at utkirb@utk.edu or (865) 974-7697.

It is suggested you print this page for future reference.

By clicking the "yes" button below, you are giving your consent to participate.

☐ Yes, I consent to participate.

☐ No, I do not wish to continue to the survey.

Vita

Lauren Hamrick is originally from southern Indiana and moved to Knoxville from Minnesota. She still considers herself a Midwesterner in spite of her cumulative eight years spent in Tennessee. Lauren has spent most of her life in school. Prior to completing coursework for both a Master's and Doctoral degree at the University of Tennessee she graduated from Bloomington North High School with an Honors Diploma, Vanderbilt University with a Bachelor's of Art, Indiana University with a Master's Degree. Her interest in trauma and PTSD began when she worked as a school counselor and was strengthened through experiences as a sexual assault victim advocate. Lauren is very glad to be one step closer to graduation with the completion of her dissertation.